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TRYING A PRODUCT VIRTUALLY BEFORE BUYING: EXAMINING THE ROLE OF FLOW IN THE CONSUMER PURCHASE INTENTIONS

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ABSTRACT

Augmented Reality (AR) allows consumers to try products, including make-up, on their faces digitally and in real-time, giving rise to a "try the product before buying" experience when shopping online. The main purpose of this research is to know the advantages of implementing AR based on flow theory. This study analyzes the relationship between interactivity, novelty, vividness, flow, learning, information utility, enjoyment, satisfaction, brand attitude, and purchase intentions in online shopping experiences that apply AR technology. The research has been conducted utilizing an online survey of 229 respondents who have used a smartphone application with AR technology. Using the structural equation modelling (SEM) method, hypothesis testing was carried out using Lisrel 8.8 software. The results showed that AR characteristics such as interactivity and novelty could increase flow, but vividness could not. The results also show that flow can affect increasing learning, information utility, and enjoyment. The results show that the application of AR technology can increase satisfaction, brand attitude, and purchase intentions of application users. On the other hand, the increase in purchase intentions is only influenced by flow and brand attitude in the online shopping experience using AR technology.

Keywords: *Augmented reality, state of flow, customer satisfaction, brand attitude, purchase intentions*

1. Introduction

Consumers would like to have a unique, colourful, and visually rich sensory environment that provides a holistic shopping experience while improving cognitive and affective reactions is one of the primary objectives (Krishna, 2012; Labrecque, 2020; Simmonds et al., 2020). Online and offline shops are having difficulties meeting the multimodal demands of buyers, particularly young consumers who rely heavily on technology-mediated settings to make purchasing decisions (Heller et al., 2019b; Petit et al., 2019). Augmented Reality (AR) technology can help bridge the gap between retail and online buying (Baek et al., 2016). Several companies, such as Sephora and IKEA, are trying to offer a new online shopping experience by utilizing technologies such as augmented reality (AR) to simplify the consumer decision journey, resulting in increased purchase intentions and consumer engagements (Biswas, 2019; Grewal et al., 2019; Holzwarth et al., 2006). AR allows consumers to try things on their faces or surroundings in real-time digitally (e.g., make-up, furniture, eyewear), providing a more direct product experience (Hilken et al., 2017). AR has enormous promise for marketers and retailers to boost online conversion rates and minimize return rates since it provides a 'try a thing before you buy it' experience (Dacko, 2017).

Previous research has shown that the consumer journey between devices used, such as desktops, laptops, smartphones, and tablets, looks significantly different (Kannan & Lee, 2017; Wagner et al., 2018). Although many studies have been conducted on the influence of sensory marketing on consumer behaviour, there has not been much research on why consumer responses differ when shopping online with multi-sensory technologies, such as AR and uni-sensory interfaces as websites. Research by Hudson et al. in 2019 showed that the application of AR technology affected consumer satisfaction and loyalty.

One of the competitors that support the application of AR technology is a smartphone that can be used anytime and anywhere and offers a different experience when shopping online. Mobile commerce (m-shopping) is a gradual evolution of e-commerce. It can be defined as consumer activity that focuses on purchasing goods and services from retailers via mobile devices such as smartphones and tablets. M-shopping is a rapidly growing phenomenon due to the increasing popularity of mobile devices such as smartphones and tablets and the increase

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and expansion of internet network services. Both e-commerce that uses a desktop computer when shopping online and m-shopping allows consumers to search for information from various sources, check product availability, compare prices, and local access products easily and reliably due to the support of technological infrastructure. Compared to e-commerce which requires a desktop, m-shopping has the same advantages as mobile internet technology, including convenience and ease of access (Lissitsa & Kol, 2019).

Flow can be defined as a "holistic sense that individuals feel when they operate with whole participation" and have cognitive and hedonic benefits to obtaining someone's life. For example, when in a flow state, a person is entirely engrossed and driven to accomplish a task. This state of absorption has been related to a lack of self-consciousness, intense attention to the work at hand, and an overall sensation of delight (Csikszentmihalyi, 1975 cited by Barhorst et al., 2021).

Based on flow theory, this study investigates augmented reality's "sweet spot". The optimum AR purchasing experiences may be accomplished by incorporating design elements that promote ideal states of flow, which have the potential to improve other customer outcomes, such as attitudes and purchase intentions. AR provides concurrent design issues for marketers to assist customers' degree of flow with the AR experience, given its immaturity in development and adoption. For marketers dubious of AR's marketing potential, an examination of AR's capacity to ideally generate a state of flow among customers is required.

The primary goal of this research is to examine the benefits of augmented reality (AR) from the standpoint of flow theory. The study examines AR's unique capabilities as a facilitator in increasing a state of flow and its effects on a variety of consumer outcomes, such as learning, information utility, enjoyment, satisfaction, brand attitude, and purchase intentions. The main goal will assist marketers in understanding the elements of AR shopping experiences that merit attention when investment and design considerations are involved.

2. Literature Review

2.1 Experience

Based on the belief that consumers prefer a satisfying experience to just a product (Abbott, 1956 cited by Barhorst et al. 2021), the entire marketing stream focuses on how consumers have an experience with a product (Holbrook & Hirschman, 1982), shop (Hui & Bateson, 1991), consuming (Holbrook & Hirschman, 1982), brands (Brakus et al., 2009), and the environment (Esbjerg et al., 2012). Experience has been recognized as a major component of competitive brand positioning in consumers' minds based on its ability to connect with the brand through sensory, affective, intellectual, and physical stimulation (Brakus et al., 2009).

Today's experiences can combine reality, virtual, and fantasy. Technological advances allow brands to transform the shopping experience through computer-generated objects that 'appear' in the same place as the real world to provide additional benefits for consumers (Barhorst, 2021).

2.2 Flow

Flow as part of the experience can be interpreted as something that rarely happens in everyday life, although almost all activities (work, study, and religious rituals) can produce flow (Csikszentmihalyi (2014). When experiencing flow, individuals generally enter a state where they are completely disconnected from the real world and are very focused on the activity (Barhorst, 2021). Hoffman and Novak (2009) state that the critical aspect of flow is full concentration and a sense of 'sink' when doing an activity. Researchers agree that individuals can experience flow because of something. It can be in games, reading, dancing, shopping, or sports (Barhorst, 2021).

2.3 Augmented Reality

Augmented Reality (AR) can be defined as the superposition of a virtual object (computer-generated images, text, sound, etc.) to the user's real environment (Faust et al., 2012). Users will experience an enriched and immersive experience with more interactive and real technology than media in general (Yim & Park, 2019).

AR technology can 'display' virtual elements, such as text-based information, enriched image media, and video, in a real environment. Users can interact directly in that environment to get a new and different experience. During the decision-making process, consumers generally reflect on the product to be purchased and imagine the experience of using the product as a consideration in making decisions (Pearson et al., 2015). It is an advantage of AR because consumers can see a 'real' picture of the product to be purchased, so they do not just imagine it.

Unlike Virtual Reality (VR), AR does not replace the real environment of the user but combines additional information (text, images, or video) and the user's real environment (Yim & Park, 2019). Viewed from the retail context, AR is easier to 'integrate' with consumers' daily lives than VR because AR can be integrated with devices used anywhere, namely smartphones (Heller et al., 2019).

There are three AR attributes: AR interactivity, AR vividness, and AR novelty (McLean & Wilson, 2019). AR interactivity shows that AR can make consumers interact with their surroundings and regulate what they see by combining consumers' real environment and sensory information digitally, including interactive visuals, sounds, and tactile information (Dwivedi et al., 2020; Carrozzi et al., 2020; Carrozzi et al. al., 2019; Hilken et al., 2018; Javornik, 2016; Yim et al., 2017). AR vividness shows that AR can represent an image realistically and in detail due to combining the real world and the virtual world (Hilken et al., 2018; van Esch et al., 2016). AR novelty shows that AR is a new technology that can provide unique and specific sensory information based on the user's current state or situation (Petit et al., 2019).

3. Research Method

3.1 Research Model

The research to be carried out adopts a research framework with the title Blending the real world and the virtual world: Exploring the role of flow in augmented reality experiences that have been carried out by Barhorst et al. (2021). This study examines the role of AR attributes (AR interactivity, AR vividness, and AR novelty) on consumer outcomes (information utility, learning, and enjoyment) to ultimately see their effect on perceptions of consumer satisfaction with the product to be purchased. The researcher also developed a frame of mind by adding several variables and the relationship between variables based on the research journals previously mentioned.

The relationship between variables can be seen in the image below. Based on the picture, the variables in the box are the variables adopted by Barhorst et al. (2021) and the arrows are the relationships between variables adopted from the research of Barhorst et al. (2021). Researchers add brand attitude and purchase intention variables based on previous studies.

3.2 Hypothesis

Interactivity is the ability of the system to allow individuals to interact easily, control, manipulate, and engage with content (Hoffman & Novak, 2009). Interactivity can be seen based on two things that replace each other: technology features and user perception (Yim et al., 2017).

H1: The characteristics of AR interactivity will positively affect the state of flow of users of the virtual artist feature on the Sephora application.

Combining the real world and the virtual world can produce unique experiences that repeatedly occur (McLean & Wilson, 2019). Every time someone uses AR, they will feel unique stimuli because they manipulate the real and virtual worlds (Barhorst et al., 2021). Novelty in the context of this research does not refer to the latest technology but refers to the latest information (stimuli) experienced by consumers every time using AR technology.

H2: Characteristics of novelty AR will positively affect the state of flow of users of the virtual artist feature on the Sephora application.

Vividness can be defined as the ability of technology to produce an environment mediated by multiple sensors (Steuer, 1992). It refers to combining the sensory experience of a tangible object that can be seen with an imaginary object created by the individual's mind to get a clear picture of a product or experience (Lee, 2004).

H3: The vividness characteristic of AR will positively affect the state of flow of users of the virtual artist feature on the Sephora application.

Perceived informativeness is a wealth of information or knowledge about products provided by the shopping interface so that it can increase the level of consumer confidence. In this case, perceived informativeness has the same meaning as an information utility. Previous research has shown that interactions that allow buyers to rotate products and place them significantly increase consumer product knowledge (Li, Daugherty, and Biocca 2002).

H4: The characteristics of AR interactivity will positively affect the information utility of users of the virtual artist feature on the Sephora application.

Butavand et al. (2020) showed that novelty could improve memory processing in the learning process. When someone is quite familiar with the background of a product, the novelty will be more easily recognized, which in turn can improve perceptual learning (Wang & Mitchell, 2011).

H5: The characteristics of AR novelty will positively affect the learning of users of the virtual artist feature on the Sephora application.

A media with features of interactivity and vividness through the application of AR technology can improve the construction of consumer imagination in their experience and integrate the environment in the real world and the virtual world to get a more enjoyable experience for consumers through product visualization. AR applications are expected to provide a playful and entertaining experience (Olsson et al., 2013).
H6: The characteristics of AR interactivity will positively affect the enjoyment of users of the virtual artist feature on the Sephora application.

One of the distinguishing characteristics of novelty is that it can be found as long as an individual processes information to describe consumer attention, leading to curiosity and becoming engrossed in the activity being carried out (Kover & James, 1993). Such psychological conditions can lead to enjoyment and immersion (Hoffman & Novak, 2009).
H7: Characteristics of novelty AR will positively affect the enjoyment of users of the virtual artist feature on the Sephora application.

The relationship between flow theory and ELM has been studied previously in the application of new technologies, such as web design. Van Noort et al. (2012) studied the process of consumer adoption of new technologies. They conducted research related to online flow experiences, in this case, consumers' experiences when shopping online via websites, to higher information elaboration and its relation to cognitive outcomes based on predictions using ELM. The results show empirical evidence that online flow can increase the elaboration of a website containing information that generates consumer thinking to visit the website.
H8: The flow will positively affect the information utility of users of the virtual artist feature on the Sephora application.
H9: The flow will positively affect the learning of users of the virtual artist feature on the Sephora application.

The state of flow of technology is associated with intrinsic enjoyment (Hoffman & Novak, 2009), while media and video game enjoyment is directly related to the state of flow (Weibel et al., 2008). No research shows that the state of flow will positively affect enjoyment when AR is applied as one of the experiences when shopping. Based on the existing literature and the unique characteristics of AR (interactivity, novelty, and vividness), the state of flow supported by AR may affect enjoyment.
H10: The flow will positively affect the enjoyment of users of the virtual artist feature on the Sephora application.

Barhorst (2021) conducted further research to see whether aspects of consumer satisfaction involving experience (flow, information utility, learning, and enjoyment) were strengthened by the presence of AR as part of the experience or not. AR technology creates a new side of experience which includes the user's ability to interact with technology (Javornik, 2016), virtual world experiences that can be presented in the real world (Rauschnabel et al., 2017), and the experience of having elements of novelty and enriched experience due to vivid experiences (McLean & Wilson, 2019). On the other hand, AR provides a unique context to consumers with a tendency to facilitate increased information elaboration and enjoyment due to an increased flow state. The use of AR technology can add to the experience based on utilitarian and hedonic aspects that can affect consumer satisfaction from the experience side.
H11: Information utility will positively affect user satisfaction with the virtual artist feature on the Sephora application.
H12: Learning will positively affect user satisfaction with the virtual artist feature on the Sephora application.
H13: Enjoyment will positively affect user satisfaction with the virtual artist feature on the Sephora application.

Enjoyment when shopping online can have a positive impact (Mathwick et al., 2001) and can be considered to influence the brand (Baek et al., 2018). Previous research has shown that increasing enjoyment while shopping can increase brand attitude and purchase intention (Javornik, 2016; Li & Meshkova, 2013; Pantano et al., 2017; Yim et al., 2017). This study aims to see the effect of enjoyment on brand attitude.
H14: Enjoyment will positively affect the brand attitude of users of the virtual artist feature on the Sephora application.

Research conducted by Hilken et al. (2021) show that the combination of AR and VR can increase purchase intention and brand attitude but only if the implementation is sorted into AR and then VR. This sequence is the best alignment in the customer's online-to-offline journey in the retail shopping experience. When done the other way around, namely VR and then AR, researchers see a detrimental impact on purchase intention and may harm brand attitude.

H15: Brand attitude will positively affect users' purchase intention of the virtual artist feature on the Sephora application.

Enjoyment while shopping is also associated with feeling 'carried away' and feeling too 'bound' so that consumers are less critical of the product to be purchased and more easily influenced (Huang & Liao, 2017; Javornik, 2016; Yim et al., 2017). This study aims to see the effect of enjoyment on purchase intention.
H16: Enjoyment will positively affect users' purchase intention of the virtual artist feature on the Sephora application.

Previous research has shown that someone will feel more involved in online shopping due to a sense of pleasure in the flow experience (Smith & Sivakumar, 2004; Hoffman & Novak, 1996). The flow experienced by consumers when they first visit an online store (internet-based store) will affect the intention to return to the site and the tendency to buy a product that was not previously planned while visiting the site (Koufaris, 2002).
H17: The flow will positively affect the purchase intention of users of the virtual artist feature on the Sephora application.

Satisfaction is the main factor affecting purchase intention (Taylor & Baker, 1994). A study of consumer decision-making styles conducted in a mall confirmed the difference between hedonic and utilitarian attributes (Alavi et al., 2016). In the context of AR, the user experience with AR enriched can increase user satisfaction and purchase intention (Poushneh & Vasquez-Parraga, 2017).
H18: Satisfaction will positively affect users' purchase intention of the virtual artist feature on the Sephora application.

The affective-cognition model proposes that when a job requires more cognitive aspects to digest information sources, a decision is generally based on cognitive reasons rather than spontaneous emotions (Shiv & Fedorikhin, 1999). In online shopping, consumers are generally less committed to examining a product as their initial consideration, whereas generally, purchasing decision making involves greater dedication and cognitive side in terms of decision making (Wolfinbarger & Gilly, 2010).
H19: The information utility will positively affect the purchase intention of users of the virtual artist feature on the Sephora application.

3.3 Research Design

The research design aims to determine user behaviour using the Sephora Virtual Artist mobile app. The authors conducted descriptive quantitative research with a survey method to achieve this goal. The object of research used is the application of AR technology to allow consumers to try a cosmetic product digitally before buying the product.

The research data used for analysis purposes has two different sources, namely primary data and secondary data. Primary data was obtained through the distribution of questionnaires to obtain quantitative data. Secondary data were obtained through a literature review with reliable sources to support this research.

The sample selection in this study used a purposive sampling technique, namely selecting respondents as a sample following the criteria determined by the researcher. The researchers used the criteria are the female population of the millennial generation and gen Z (aged 18-41 years), who have tried the Virtual Artist feature on the Sephora mobile app and have purchased cosmetic products online.

The data analysis technique used is multivariate structural equation modelling (SEM) analysis using LISREL software. The stages in SEM include an analysis of the measurement model and then an analysis of the structural model. The measurement model is used to recalculate the validity, reliability, and suitability of the research model (Goodness of Fit). The structural model is used to analyse the value of the influence or relationship between the proposed variables, including testing the research hypothesis.

4. Results and Discussion

The criteria for respondents in this study were all women aged 18-41 years when filling out the questionnaire that had purchased cosmetic products online and had used the Virtual Artist feature on the Sephora mobile app. If the respondent meets all of these criteria, the respondent will continue the questionnaire to this question. However, if the respondent does not meet any of the criteria, the respondent will be directed to the closing page and do not need to answer the main question. Data collection was carried out from February 26, 2022, to March 6, 2022. Data for the main test was obtained from 229 respondents.

Based on the structural model fit test, the RMSEA value is 0.078, which means that the structural model already has a good fit. On the other hand, most of the structural model fit test results showed more good fit and marginal fit than poor fit, so it can be concluded that the structural model already has a fairly good level of fit.

The research hypothesis was tested using structural model t-value analysis using the SEM method and the LISREL software. The t-value of the structural model will be compared with the t-table value (one-tailed, 5%) of 1.65, where when the t-value is greater than 1.65, the research hypothesis can be accepted. A summary of the results of the research hypothesis test is attached.

Table 1. Hypothesis Testing Result

Number	Hypothesis	Loading Factor (Std Solution)	t-value	t-table (one tailed, 5%)	Result
1.	The characteristics of AR interactivity will positively affect the state of flow of users of the virtual artist feature on the Sephora application.	0,33	1,80	1,65	Hypothesis accepted
2.	Characteristics of novelty AR will positively affect the state of flow of users of the virtual artist feature on the Sephora application.	0,24	2,02	1,65	Hypothesis accepted
3.	The vividness characteristic of AR will positively affect the state of flow of users of the virtual artist feature on the Sephora application.	0,18	1,37	1,65	Hypothesis rejected *
4.	The characteristics of AR interactivity will positively affect the information utility of users of the virtual artist feature on the Sephora application.	0,82	4,95	1,65	Hypothesis accepted
5.	The characteristics of AR novelty will positively affect the learning of users of the virtual artist feature on the Sephora application.	0,69	7,20	1,65	Hypothesis accepted
6.	The characteristics of AR interactivity will positively affect the enjoyment of users of the virtual artist feature on the Sephora application.	0,55	5,43	1,65	Hypothesis accepted
7.	Characteristics of novelty AR will positively affect the enjoyment of users of the virtual artist feature on the Sephora application.	0,27	3,27	1,65	Hypothesis accepted
8.	The flow will positively affect the information utility of users of the virtual artist feature on the Sephora application.	0,19	2,88	1,65	Hypothesis accepted
9.	The flow will positively affect the learning of users of the virtual artist feature on the Sephora application.	0,27	4,14	1,65	Hypothesis accepted
10.	The flow will positively affect the enjoyment of users of the virtual artist feature on the Sephora application.	0,14	2,19	1,65	Hypothesis accepted
11.	Information utility will positively affect user satisfaction with the virtual artist feature on the Sephora application.	0,63	2,52	1,65	Hypothesis accepted
12.	Learning will positively affect user satisfaction with the virtual artist feature on the Sephora application.	0,15	2,24	1,65	Hypothesis accepted

13.	Enjoyment will positively affect user satisfaction with the virtual artist feature on the Sephora application.	0,26	2,29	1,65	Hypothesis accepted
14.	Enjoyment will positively affect the brand attitude of users of the virtual artist feature on the Sephora application.	0,81	8,30	1,65	Hypothesis accepted
15.	Brand attitude will positively affect users' purchase intention of the virtual artist feature on the Sephora application.	0,25	2,49	1,65	Hypothesis accepted
16.	Enjoyment will positively affect users' purchase intention of the virtual artist feature on the Sephora application.	0,04	0,20	1,65	Hypothesis rejected*
17.	The flow will positively affect the purchase intention of users of the virtual artist feature on the Sephora application.	0,35	3,95	1,65	Hypothesis accepted
18.	Satisfaction will positively affect users' purchase intention of the virtual artist feature on the Sephora application.	0,76	1,55	1,65	Hypothesis rejected*
19.	The information utility will positively affect the purchase intention of users of the virtual artist feature on the Sephora application.	-0,52	-1,31	-1,65	Hypothesis rejected*

* The hypothesis is rejected because the t-value is below the t-table value

Source: Researcher's data analysis (2022)

Based on the results of hypothesis testing, several research hypotheses are rejected because they have a lower t-value than the t-table value. On the other hand, most hypotheses are accepted because they have a t-value above the t-table value.

Based on the results of hypothesis testing, flow and brand attitude affect consumer purchase intentions. However, so that brand attitude can affect purchase intention, consumers must experience enjoyment first. In contrast to flow which is not mediated by other variables, in this case, flow mediates novelty and interactivity so that it can affect purchase intention.

5. Conclusion and Implications

There is a significant relationship between novelty and interactivity and the state of flow of users of the Virtual Artist feature of the Sephora mobile app. On the other hand, there is an insignificant relationship between vividness and the state of flow of users of the Virtual Artist feature of the Sephora mobile app. There is a significant relationship between the state of flow and learning, information utility, and users' enjoyment of the Virtual Artist feature of the Sephora mobile app. There is a significant relationship between learning, information utility, and enjoyment on satisfaction with the AR experience of users of the Sephora Virtual Artist mobile app feature. A significant relationship is also seen between enjoyment and brand attitude of users of the Virtual Artist feature of the Sephora mobile app. There is a significant relationship between brand attitude and users of the Virtual Artist feature of the Sephora mobile app. On the other hand, there is an insignificant relationship between enjoyment, information utility, and satisfaction with AR experience on purchase intention. Based on the research results, marketers can focus on increasing the interactive side so that consumers feel the flow. The higher the flow experienced by consumers, the higher the consumer's purchase intention.

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